



Mapped and edited by Tennessee Valley Authority  
Published by the Geological Survey  
Control by USGS, USGS, and TVA  
Topography by USGS and TVA by photogrammetric methods.  
Map field checked by TVA, 1946  
Polyconic projection, 1927 North American datum  
10,000 foot grid based on Alabama (East) rectangular  
coordinate system  
1000 meter Universal Transverse Mercator Grid ticks.

UTM GRID AND 10° MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET

SCALE 1:24,000  
CONTOUR INTERVAL 20 FEET  
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION  
Heavy-duty ——— Poor motor road  
Medium-duty ——— Wagon and jeep track  
Light-duty ——— Foot trail  
U. S. Route ——— State Route

QUADRANGLE LOCATION

GROVE OAK, ALA.  
N3422.5 W8600.7.5  
1946  
PHOTOGRAPHED 1946

**LANDSLIDES AND RELATED FEATURES**

OF THE GROVE OAK, ALA. QUADRANGLE

by  
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1982  
U.S. Geological Survey  
OPEN FILE MAP 82-181 (D-16)

**LANDSLIDES AND RELATED FEATURES INTERPRETED FROM AERIAL PHOTOGRAPHS:**  
1:20,000 (black and white) 1971, 1972  
1:40,000 (black and white) 1978

**Photointerpretation and field check 1980-1981**  
This map is preliminary and has not been reviewed for conformity w/ U.S. Geological Survey editorial standards

**ACTIVE OR RECENTLY ACTIVE LANDSLIDE**  
Complex landslide composed of earthflow, debris slide, earth and rock slump. Identified from historical records, and from scars, debris and other field evidence. Ground extremely unstable; sliding accelerated by excavation, loading and changes in drainage conditions. May include areas with several active slides too small to be shown separately. Questioned where doubtful. May be shown with symbol (a) where difficult to discern.

**OLD LANDSLIDE**  
Area of extensive hummocky ground caused by earthflow and earth and rock slump. Lacks clear evidence of active sliding. Relatively stable in natural, undisturbed state, generally not affected by small structures properly sited in areas away from the edge of the toe; can be reactivated by extensive, rapid excavation, loading, and changes in ground water and surface water conditions. Area of old landslide probably includes recent ones not identified from field evidence or otherwise documented. Upslope boundary of landslide generally defined by modified scarp, but downslope (toe) may be gradational and not well defined. Questioned where doubtful.

**AREAS SUSCEPTIBLE TO DEBRIS FLOWS AND DEBRIS AVALANCHES**  
Primarily shallow, narrow ravines and chutes with accumulation of stony colluvium generally 10 ft. (3 m) or less in thickness; susceptible to rapid movement during intense rainfall. Most ravines and chutes designated show evidence of former debris flows and avalanches. Symbol (a) designates historical debris flow or debris avalanche.

**AREAS SUSCEPTIBLE TO ROCKFALL**  
Steep, locally vertical, natural and man-made slopes and cliffs, 15 ft. (4.5 m) or more high; formed dominantly of sandstone, limestone, sandy shale, mudstone and claystone. Interbedded mudstone, claystone and shale weather rapidly leaving sandstone and limestone rock faces unsupported.

**SOIL AND ROCK SUSCEPTIBLE TO LANDSLIDING**  
Soil and rock similar to that involved in landslide elsewhere in map area; primarily areas underlain by claystone, mudstone and shale associated with other rock types. Rock weathers rapidly on exposure forming clayey soil highly susceptible to sliding. Includes coves (U-shaped, shallow valleys) containing thick layers of clayey soil that are very susceptible to sliding where excavation breaks continuity of slope and where overlaid by artificial fill.

**AREAS LEAST PRONE TO LANDSLIDES**  
Map areas in which no patterns or symbols are shown; primarily valley floors, ridge tops and broad benches; modification by excavation and fill may lead to local landslides. Includes slopes where landslides are sparse.

The first five digits of the open file number designate the specific 1:250,000 scale map sheet of which this quadrangle is a part. The last two digits designate the position of the quadrangle in a subdivision of the 1:250,000 scale map based on rows and tiers shown in the diagram to the right. The location of this quadrangle is shown by the black square.

**NOTE**  
Information shown is intended as a general guide to ground conditions as of the date of field check. Additional landslides and rockfalls should be anticipated in all map units. The map unit depicts the dominant condition in the area delineated and variations in slope stability may occur at any point in the unit. This map is suitable for general planning purposes and as a supplement to more detailed studies for site selection. The map cannot be used as a substitute for detailed geologic and engineering investigations to establish design and construction criteria of specific sites. Some symbols may not appear on this map because the description is applicable to a series of maps.

**MAN-MADE FEATURES**  
Strip mines (combination of letter symbols indicates complex formed of more than one type of strip mine)  
sh bench with high wall  
sf furrowed with high wall  
sd multiple furrows and multiple benches  
ss hilltop removed  
srg reclaimed by grading  
sru reclaimed by secondary use  
sh/r regraded in part, high wall remains  
Coal refuse banks  
r identified on aerial photographs; not classified in field check  
rb not burnt nor on fire  
rbb burnt  
rbd burning  
rbs sludge  
Quarries  
q quarry site  
qub spoil bank, quarry waste  
Gravel pits  
g site of gravel pit  
Slides in man-made features  
af earth flow in fill  
a/s earth flow in strip castings  
a/r earth flow in coal refuse

**GADSDEN 1° x 2° SHEET**

Quadrangle does not contain landslides or related features

Limit of inventory